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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,102	04/18/2001	Hideo Nobuhara	13409.3US01	9004

23552 7590 05/30/2003

MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER

BOYD, JENNIFER A

ART UNIT	PAPER NUMBER
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1771

9

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/837,102	NOBUHARA ET AL.	
	Examiner	Art Unit	
	Jennifer A Boyd	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) ✓ | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) ✓ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The Applicant's Amendments and Accompanying Remarks, filed March 5, 2003, have been entered as Paper No. 8 and have been carefully considered. Claims 2 and 11 have been amended and claims 1 – 15 are pending. In view of Applicant's Amendment, the 35 U.S.C. 112, second paragraph rejection of claims 2 and 11 has been withdrawn as set forth in paragraphs 5 and 6 of Paper No. 8. In view of Applicant's Arguments, the 35 U.S.C. 102(b) rejection as anticipated by or, in the alternative, under 35 U.S.C. 103(a) rejection as obvious over Yamaguchi Osamu et al. (JP 2000-279725) has been withdrawn as set forth in paragraphs 7 – 10 of Paper No. 8. After an updated search, additional prior art was discovered that appears to render the instant claims unpatentable.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102/ 103

3. Claims 1 – 2, 11 and 15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Renjilian (US 3,834,547).

Renjilian teaches a filtration device in which a continuous strand of treated roving is wound about a perforated core member having perforations uniformly distributed over substantially the whole surface (column 4, lines 6 – 15). The roving strand is wound in a twill pattern and directionally aligned (See Figure 7). It should be noted that "roving"

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traditionally is formed by carding a blend of textile fibers into a web and cutting by a grooved roll into a number of flat ribbon-like web ends (column 1, lines 15 – 30). The fibers comprising the roving may include polyester and polypropylene (column 5, lines 30 – 34), which are known in the art to be thermoplastic.

Although Rejilian does not explicitly teach that the claimed nonwoven strip satisfies the following equation: $(\log_{10} Y) < 3.75 - 0.6 (\log_{10} X)$ as required by claim 1 and $(\log_{10} Y) < 3.75 - 0.75 (\log_{10} X)$ as required by claim 2 where X is the airflow amount and Y is the basis weight, it is reasonable to presume that nonwoven strip satisfies the following equation: $(\log_{10} Y) < 3.75 - 0.6 (\log_{10} X)$ as required by claim 1 and $(\log_{10} Y) < 3.75 - 0.75 (\log_{10} X)$ as required by claim 2 where X is the airflow amount and Y is the basis weight is inherent to Rejilian. Support for said presumption is found in the use of like materials (i.e. thermoplastic nonwoven wound around a perforated cylinder) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed nonwoven which satisfies the following equation: $(\log_{10} Y) < 3.75 - 0.6 (\log_{10} X)$ as required by claim 1 and $(\log_{10} Y) < 3.75 - 0.75 (\log_{10} X)$ as required by claim 2 where X is the airflow amount and Y is the basis weight would obviously have been present once the Rejilian product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Claim Rejections - 35 USC § 103

4. Claims 3 – 4, 6 – 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Renjilian (US 3,834,547).

Rejilian teaches a filtration device in which a continuous strand of

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treated roving is wound about a perforated core member having perforations uniformly distributed over substantially the whole surface (column 4, lines 6 – 15). The roving strand is wound in a twill pattern (See Figure 7). It should be noted that “roving” traditionally is formed by carding a blend of textile fibers into a web and cutting by a grooved roll into a number of flat ribbon-like web ends (column 1, lines 15 – 30). The fibers comprising the roving may include polyester and polypropylene (column 5, lines 30 – 34), which are known in the art to be thermoplastic.

Rejilian fails to teach that the number of windings of the nonwoven fabric strip from one end to the other end in a longitudinal direction of the perforated cylinder is one to 10 per length of 250 mm in the perforated cylinder as required by claim 3, the 2-fold value of the winding number is represented by a fraction having a denominator of two figures or less which is a non-reducible approximate value, the denominator is 4 to 40 as required by claim 4, the strip has a width of 0.5 to 40 cm as required by claim 6, the product of the width and basis weight is 10 to 200 as required by claim 7, the strip has a thickness of 0.02 to 1.20 mm as required by claim 8 and the filter has a void rate of 65 – 85% as required by claim 10. It should be noted that the number of windings, 2-fold value of the winding number, width, basis weight, thickness and void rate are result effective variables. As the number of windings increase and fraction, the filter will more efficiently filtrate mediums containing fine particles. As the width increases, the strip has more coverage area while thinner strip allow more fine tuning in filtration capabilities. As the void rate increases, the filtration properties change. It would have been obvious to one having ordinary skill in the art at the time the invention was create a filter with the number of windings of the nonwoven fabric strip from one end to the other end in a longitudinal direction of the

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perforated cylinder is one to 10 per length of 250 mm in the perforated cylinder as required by claim 3, the 2-fold value of the winding number is represented by a fraction having a denominator of two figures or less which is a non-reducible approximate value, the denominator is 4 to 40 as required by claim 4, the strip has a width of 0.5 to 40 cm as required by claim 6, the product of the width and basis weight is 10 to 200 as required by claim 7, the strip has a thickness of 0.02 to 1.20 mm as required by claim 8 and the filter has a void rate of 65 – 85% as required by claim 10. since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the number of windings, 2-fold value of the winding number, width, basis weight, thickness and void rate to create a properly efficient filter depending on type of particle being filtrated.

5. Claims 5, 9, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Renjilian (US 3,834,547) in view of Ogata (EP 466381 A1).

Renjilian teaches the claimed invention except fails to disclose that the strips can be thermally bonded together as required by claim 5, can be made of a melt-blown non-woven fabric as required by claim 13 and comprise a composite thermoplastic fiber comprising a low melting resin and a high melting resin, a difference of the melting points between these resins being 100C or more as required by claim 14.

Ogata teaches a precision cartridge filter comprising a web composed of conjugate microfibers by a conjugate melt-blow process, which conjugate microfibers are composed of a lower melting point component and a higher melting point component having a melting point difference between them of 20C or more and heating the web and molding it to the shape of a

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cartridge filter at a temperature at or about the lower melting point but below the higher melting point (Abstract). The heating process can involve a heat embossing process (column 4, lines 48 – 53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to thermally bond the nonwoven strips together such as by embossing as suggested by Ogata in the filter of Renjilian motivated by the desire to create a more cost efficient process by eliminating the need for a separate adhesive component. It should be noted that the embossing area rate of 5 to 25% as stated in claim 9 is a process limitation and it not given any patentable weight because the embossing rate has no material effect on the final product.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a melt-blown nonwoven as suggested by Ogata in the filter of Renjilian motivated by the desire to reduce capital costs while creating a more structurally integral fabric.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use composite fibers as suggested by Ogata in the filter of Renjilian motivated by the desire to bond the non-woven with the lower melting temperature fiber component and create stiff and strong structure provided by the higher melting temperature fiber component (Ogata, column 5, lines 18 – 30).

Response to Arguments


6. Applicant's arguments with respect to claims 1- 15 have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Jennifer Boyd
May 28, 2003


ELIZABETH M. COLE
PRIMARY EXAMINER